

RECEIVED
CENTRAL FAX CENTERApplication No. 10/727,550
Attorney Docket: 112.P91007REMARKS

JAN 23 2007

Status of Claims

Claims 28 and 32 – 36 have been cancelled and new claims 40 – 50 are added for examination. Claims 1 – 13, 15 – 21, 23, 26 – 29, 31, 37, and 39 have been amended. Claims 1 – 27, 29 – 31, 37 – 50 are pending in the application. Assignee respectfully submits that no new subject matter has been added in these amendments. Cancellation of claims 28 and 32 – 36 has been made without prejudice and no subject matter has been surrendered in the process. Accordingly, no prosecution history estoppel should apply.

Allowable Subject Matter

In the Final Office Action of August 23, 2006, the Examiner has allowed claims 16 – 25 and has indicated that claim 28 would be allowed if rewritten in independent form. While claims 16 – 21, and 23 have been amended no new matter has been added. Claim 26 has been amended to incorporate at least some of the limitations of cancelled claim 28. In addition, claim 23 has been amended to correct a minor typographical mistake. Accordingly, Assignee believes that claims 16 – 25, 26 – 27, 29 – 31 and 39 are in condition for allowance.

Claim Rejections35 USC § 102(e)Claim 1

In a Final Office Action of August 23, 2006, the Examiner rejected claim 1 under 35 USC § 102(e) as being anticipated by U.S. Patent Publication No. 2002/0130390 by Ker et al. (hereinafter the "390 publication").

The 390 publication fails to disclose all limitations

Claim 1, as amended, recites, in part:

A semiconductor device, comprising:
a semiconductor substrate; a first well formed in the substrate;
a second well formed in the substrate;
a first doped region formed in the second well,
a second doped region formed in both the first well and the second well...
(emphasis added).

Independent claim 40 recites similar limitations.

The 390 publication appears to show (see, e.g., Fig. 12) a p-well 58 formed in a p-substrate 46 with two n-wells 56 bracketing either side of well 58. Further, there appears to be several doped regions 60, 62 and 64 of both types formed in well 58. Importantly, the 390 publication does not show in Fig. 12, or disclose elsewhere, that any of doped regions 60, 62 and 64 are formed in both wells 56 and 58. Thus, Assignee respectfully submits that, at a minimum, the 390 publication fails to disclose "a second doped region formed in both a first well and a second well" as claimed.

In conclusion, Assignee asserts that, for at least this reason, claim 1, the claims depending from claim 1, and all other claims pending in this application are patentable over the 390 publication.

35 USC § 103(a)Claims 1-3, 15, 26, and 37-39

The Examiner rejected claims 1 – 3, 15, 26, and 37 – 39 under 35 USC § 103(a) as being unpatentable over U.S. Patent No. 6,566,715 to Ker et al. (hereinafter the "715 patent") in view of the 390 publication.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, and not based on applicant's disclosure. *In re Vaack*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). MPEP § 2142.

Failure to teach or suggest all the claim limitations

Claim 1, as amended, recites:

A semiconductor device, comprising:
a semiconductor substrate; a first well formed in the substrate;
a second well formed in the substrate;
a first doped region formed in the second well,
a second doped region formed in both the first well and the second well; and
a deep well formed in the substrate that physically isolates the substrate from at least the second well,
wherein the first well, the second well, and the first doped region collectively form a parasitic bipolar junction transistor (BJT),
wherein the first well comprises a collector of the BJT, the second well comprises a base of the BJT, the first doped region comprises an emitter of the BJT,
and wherein the second doped region is adapted to receive a trigger current or a trigger voltage, and

wherein the deep well does not form a terminal of a transistor. (emphasis added).

Independent claim 40 recites similar limitations to those emphasized above.

The Examiner has acknowledged that the 390 publication fails to disclose or suggest "a second doped region formed in both the first well and the second well" as claimed. The Examiner has offered the 715 patent to correct this deficiency in the 390 publication.

The 715 patent appears to show (see, e.g., Fig. 5B) a p-well 32 formed in a p-substrate 30 with two n-wells 44 bracketing either side of well 32. Further, there appears to be several doped regions 36, 38 and 40 of both types formed in the well 32 where one of those doped regions, region 38, appears to be formed in both wells 44 and 32.

The Examiner has asserted that the 715 patent discloses a:

semiconductor device...comprising **a second doped region 40 for receiving a trigger current or a trigger voltage**...wherein a portion of the second doped region is formed in the first well, and another portion in a second well
(Office Action, page 6; emphasis added).

However, Assignee respectfully submits that, while the 715 patent appears to disclose that doped region 40 serves as the "trigger node," it also discloses that doped region 40 is formed in only one well. (715 patent; col. 4, lines 15-35). Assignee further notes that the 715 patent does not disclose and/or suggest that doped region 40 is "formed in both a first well and a second well" as claimed and/or that doped region 38, which does appear to be formed in two wells, is "adapted to receive a trigger current or a trigger voltage" as claimed. Thus, Assignee respectfully asserts the 715 patent fails to disclose and/or suggest, with respect to either Fig. 5B or any other teachings, a doped region formed in both a first well and a second well that is also adapted to receive a trigger current or a trigger voltage. Hence, Assignee respectfully submits that neither the 390 publication nor the 715 patent discloses

and/or suggests "a second doped region formed in both a first well and a second well...wherein the second doped region is adapted to receive a trigger current or a trigger voltage" as claimed.

In conclusion, Assignee maintains that, for at least this reason, neither the 390 publication or the 715 patent, taken alone or in combination, teach and/or suggest all claim limitations recited in claim 1. Thus, Assignee respectfully submits that the Examiner has failed to establish a *prima facie* case of obviousness, because, at minimum, the prior art references do not teach or suggest all claim limitations.

Because new claims 40 – 50 recite limitations similar to claim 1, Assignee respectfully submits that, for the same reasons, neither the 390 publication nor the 715 patent, taken alone or in combination, teach and/or suggest all limitations of claims 40 – 50 of the present application.

Claims 4 – 14, 27, and 29 – 31

The Examiner rejected claims 4 – 14, 27, and 29 – 31 under 35 USC § 103(a) as being unpatentable over the 715 patent, in view of the 390 publication, in further view of U.S. Patent No. 5,637,901 to Belgal et al (hereinafter the "901 patent").

Assignee respectfully submits that the 901 patent fails to correct the deficiencies, as set forth above, in either the 715 patent and/or the 390 publication. Therefore, because claims 4 – 14, 27, and 29 – 31 depend from claims 1 or 26, because claims 1 and 26 are patentable over the 715 patent and the 390 publication, taken either alone or in combination, as set forth above, and because the 901 patent fails to correct the deficiencies of either the 715 patent and/or the 390 publication, Assignee respectfully submits that claims 4 – 14, 27, and 29 – 31 are also patentable over the 715 patent, in view of the 390 publication, in further view of the 901 patent.

Because new claims 40 – 50 recite limitations similar to claim 1, Assignee respectfully submits that, for the same reasons, neither the 390 publication and/or the 715 patent and/or the 901 publication, taken alone or in combination, teach and/or suggest all limitations of claims 40 – 50 of the present application.

Patentability of claims 1 and 40 over other art of record

For at least the reasons set forth above with respect to the patentability of claims 1 and 40 over the 390 publication and/or the 715 patent and/or the 901 publication, Assignee respectfully submits that claims 1 and 40, and any claims depending there from, are patentable over any and all references of record in this patent application whether those references are taken alone and/or in any combination thereof.

Response to examiner's characterization of a semiconductor well

In supporting the rejections of the claims, the Examiner has offered that

(D)oped regions...are well regions because they are a source of N+ type (or P+ type) semiconductor which are needed for the flowing of current. According to Merriam-Webster's Collegiate Dictionary, Tenth Edition, a well is a source from which something may be drawn as needed. (Office Action; page 3)

While Assignee declines to take any position on the accuracy or applicability of Examiner's adopted definition of a semiconductor well, Assignee respectfully asserts that such a definition is inconsistent with the cited reference's teachings. That is, if a doped region in a semiconductor is equivalent to a semiconductor well, as the Examiner appears to be suggesting, then why, for example, does the 390 publication distinguish between doped regions and wells (see, e.g., items 56 and 60 of Fig. 12)?

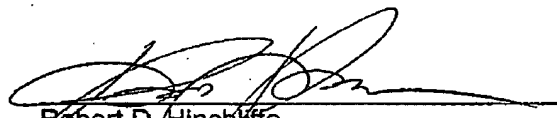
Application No. 10/727,550
Attorney Docket: 112.P91007CONCLUSIONRECEIVED
CENTRAL FAX CENTER

JAN 23 2007

In view of the foregoing, it is respectfully submitted that all of the claims pending in this patent application are in condition for allowance. Should it be determined that an additional fee is due under 37 CFR §§1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account 50-3703.

If the Examiner has any questions, he is invited to contact the undersigned at (503) 439-6500. Timely consideration of this patent application and early allowance of all the claims is respectfully requested.

Respectfully submitted,

Dated: January 23, 2007
Robert D. Hinchliff
Patent Attorney
Reg. No. 55,268

Berkeley Law & Technology Group, LLC
1700 NW 167th Place, Suite 240
Beaverton, OR 97006
(503) 439-6500
Customer No. 43831

CERTIFICATE OF FACSIMILE

I hereby certify that this correspondence is being submitted via facsimile or deposited with the United States Postal Service as first class mail with sufficient postage in an envelope addressed to the Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on:

January 23, 2007
Date of TransmissionLeslie Ray
Name of Person Transmitting CorrespondenceLeslie Ray
Signature